DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

REPLY TO
ATTENTION OF

July 20, 2011

Environmental Section

Jane B. Watson, Ph.D.
Associate Director
Ecosystems Protection Branch
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Region VI, Mail Code 6WQE
Dallas, Texas 75202-2733

Dear Dr. Watson:

Reference is made to documents entitled *Houston – Galveston Navigation Channels, Texas Limited Reevaluation Report and Final Supplemental Environmental Impact Statement* dated November 1995, describing our proposed discharge plan for maintenance dredging of the Federal Navigation Project, Houston - Galveston Navigation Channels (HGNC), Texas.

This is to notify you that maintenance dredging is planned to remove restrictive shoals from the Houston Ship Channel - Exxon to Carpenter Bayou. Dredging is scheduled to commence in September 2011, and will take approximately 120 days to complete. The work duration will depend on the exercise of the contract options. The work will be performed by contract pipeline dredge between station numbers 295+00 and 520+00. This contract specifies dredging about 1,500,000 cubic yards (CY) of dredged material if all of the options are awarded. The Lost Lake and Peggy Lake upland confined placement areas will be utilized for dredged material discharge operations. A copy of the plan sheets for this job is provided to assist you in your review. A complete set of plans and specifications for this job can be downloaded at: https://www.fbo.gov/index?s=opportunity&mode=form&id=d2efc390a278e4e74391ebce20a2a7b0&tab=core&_cview=1

Water, elutriate, and sediment samples were recently collected and are undergoing chemical analyses. Samples will be analyzed for the standard list of contaminants of concern with the addition of dioxins and furans. A copy of the data will be provided when available. A review of the National Response Center web page was conducted. There were no reports of any significant chemical or petroleum spills in the project vicinity since the most recent dredging was completed in 2008. Additionally, historical data previously provided to you indicate that no unacceptable adverse impacts are expected to occur from the dredging and discharge operations.

Should you need additional information or have any questions concerning the proposed operations, please call Ms. Lisa Finn at (409) 766-3949.

Sincerely,

Carolyn Murphy
Chief, Environmental Section

Enclosure
Copies Furnished:

U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, Texas 77058

Mr. Rusty Swafford
National Marine Fisheries Service
4700 Avenue U
Galveston, TX 77551-5997

TCEQ-MC150
ATTN: Mr. Mark Fisher
P.O. Box 13087
Capitol Station
Austin, TX 78711-3087

Ms. Rebecca Hensley
Texas Parks and Wildlife Dept.
1502 FM 517 East
Dickinson, TX 77539

Ms. Karen McCormick, Chief
Marine and Coastal Protection Section
EPA R6 (WQ-EC)
1445 Ross Avenue
Dallas, TX 75202-2733

Ms. Nicole Hausler
Port of Houston Authority
P.O. Box 2562
Houston, TX 77252-2562

CF: w/o Encl:
CESWG-OD-N

HOUSTON SHIP CHANNEL, TEXAS

PIPELINE DREDGING

EXXON TO CARPENTER'S BAYOU

Coastal Navigation and Environmental Restoration

Office of the District Engineer
U. S. Army Engineer District, Galveston
Corps of Engineers
Galveston, Texas
July 2011

TOTAL ARMY QUALITY

This project was designed by the Galveston District of the U.S. Army Corps of Engineers. The initials or signatures and registration designations of individuals appear on these project documents within the scope of their employment as required by ER 1110-1-8152.

SOLICITATION NO. W912HY-11-B-0015
FILE NO. HSC 401-529

PRINTED ON RECYCLED PAPER

Houston Ship Channel Alignment Data

No	Type	Station	x=Easting	y=Northing	Radius Length	Delta (Deflection Angle)	Length of Curve (L)	Chord Direction	Chord Length (LC)	Tangent Angle (PC to PI) Circular	Tangent Distance (T) Circular	Tangent Angle Linear	Tangent Length (Linear)
	PT	251+01.079	3215054.44	2834281.26	0							N 66°[illegible]22" W	4,524.515
Curve3	PC	296+25.594	3220807.71	2834603.06	3039.74	28°53'41" Right	1,829.127	N 72°21'[illegible]" W	1,802.265	N 86°[illegible]22" W	[illegible]		
	PT	314+54.021	3221071.51	2835298.40	0							N 58°[illegible]42" W	2,302.125
Curve7	PC	340+56.046	3218912.86	2835855.12	3430.56	31°25'40.597" Right	1,772.737	N 42°46'10.22" W	1,749.147	N 58°59'36.46" W	974.228		
	PT	355+[illegible]	3218722.63	2837641.16	0							N 26°32'53.87" W	1,359.223
Curve3	PC	426+[illegible]	3215864.73	2845131.88	3276.2	31°49'21.330" Left	1,728.356	N 42°[illegible] W	1,684.061	N 26°32'58.37" W	875.467		
	PT	437+45.877	3214918.42	2844424.77	0							N 58°17'20.20" W	1,362.155
Curve6	PC	450+27.443	3213308.21	2845413.33	4004.891	31°36'36.17" Left	2,209.369	N 74°[illegible] W	2,180.771	N 58°19'20.20" W	1,116.128		
Curve10	PCC	484+12.179	3211952.93	2846656.72	2677	60°29'14.98" Left	2,818.485	S 59°[illegible] W	2,774.345	N 89°55'15.41" W	2,540.840		
	PT	507+23.730	3209577.94	2844024.00	0							S 27°[illegible] W	2,[illegible]

Horizontal Control

Station Name	Location	x=Easting	y=Northing	Latitude	Longitude	Elevation
[illegible]	San Jacinto Bay	3,213,558.[illegible]	13,846,560.[illegible]	29°45'[illegible] N	95°[illegible] W	2.07 ft (MLT)
Lil Rose [illegible]		3,213,943.57	13,847,285.73	29°45'51.[illegible] N	95°[illegible]1.22" W	29.62 ft (MLT)
[illegible] 2006		3,216,030.11	13,837,[illegible]	29°44'[illegible] N	95°[illegible]5.26" W	3.36 ft (MLT)
2269		3,218,987.48	13,835,757.81	29°44'[illegible] N	95°[illegible] W	14.06 ft (MLT)
2270		3,215,955.12	13,835,744.86	29°44'[illegible] N	95°[illegible] W	14.41 ft (MLT)

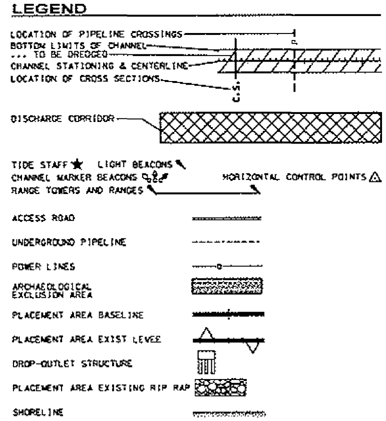
TIDE STAFF DATA

Channel	Number	Tide Staff Name	Easting/X NAD83	Northing/Y NAD83	Latitude	Longitude	MLT ft Below NGVD	Remarks
Houston Ship Channel	1	Morgans Point Staff	3,240,[illegible]	13,817,[illegible]	N 29°[illegible]	29°[illegible] W	1.[illegible]	
	2	Peggy Reef Range Staff	3,217,[illegible]	13,835,056	N 29°[illegible]	29°[illegible] W		
	4	Battleship Staff	3,[illegible]	13,841,721	N 29°[illegible]	29°[illegible] W		Dual Staff 1.79 ft [illegible] Datum [illegible]
	19	Green 109 Staff	3,201,041	13,838,[illegible]	N 29°[illegible]	29°[illegible] W		

GENERAL NOTES:

1. HORIZONTAL COORDINATES ARE REFERENCED TO TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE NAD83.
2. ELEVATIONS ARE REFERENCED TO COE MEAN LOW TIDE (MLT) DATUM.
3. BEFORE AND AFTER DREDGING SURVEYS WILL BE TAKEN UTILIZING ELECTRONIC POSITIONING AND DEPTH EQUIPMENT. NO REFERENCE LINE WILL BE ESTABLISHED BY THE GOVERNMENT.
4. ADDITIONAL CONTROL POINTS AND ALIGNMENT DATA (IF AVAILABLE) WILL BE FURNISHED TO THE CONTRACTOR UPON REQUEST IN WRITING.
5. ALL CHANNEL END SLOPES SHALL BE EQUAL TO CHANNEL SIDE SLOPES AT THE SAME STATION.
6. THE CONTRACTOR SHALL NOT CONDUCT ANY CONSTRUCTION ACTIVITY WITHIN THE EXCLUSION AREAS INCLUDING CLEARING, EXCAVATION, FILLING OR ANY TYPE OF VEHICULAR ACTIVITY.
7. CONTRACTOR SHALL NOTIFY PIPELINE/UTILITY OWNERS 48 HOURS PRIOR TO ANY WORK OVER OR ADJACENT TO THEIR PIPELINE/UTILITY USING ONECALL OR ANY OTHER MEANS NECESSARY.

LEGEND



SOLICITATION NO.
W912HY-11-B-0015

U.S. Army Corps of Engineers
Galveston District

U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
CHRISTOPHER W. SALLESE, Col, C.E.,
DISTRICT COMMANDER

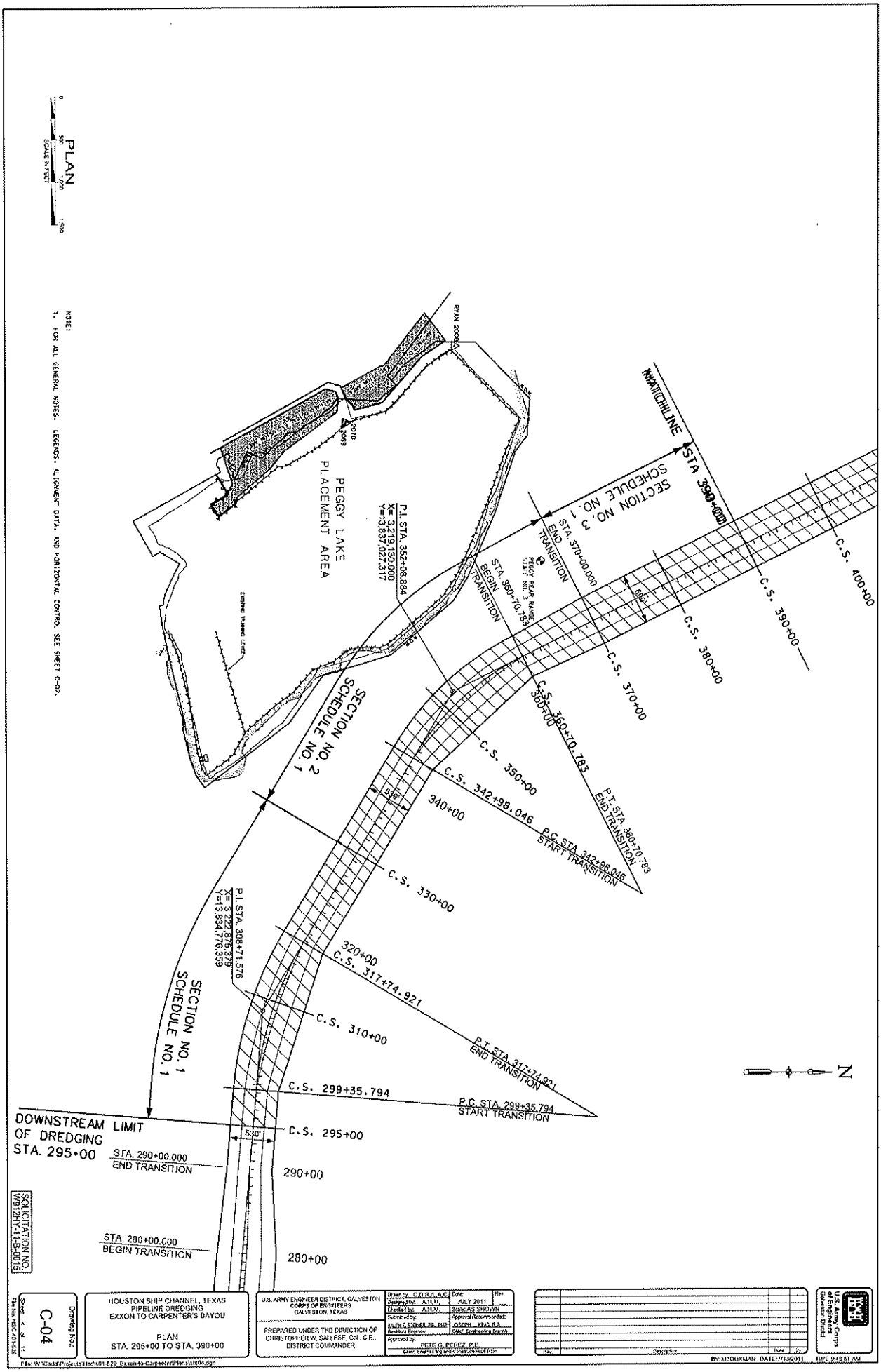
Drawn by: C.D.R.A.A.C. | Date: JULY 2011
Designed by: A.H.M.
Checked by: A.H.M. | Scale: AS SHOWN
Submitted by: | Approval Recommended:
Approved by: PETE G. PEREZ, P.E.

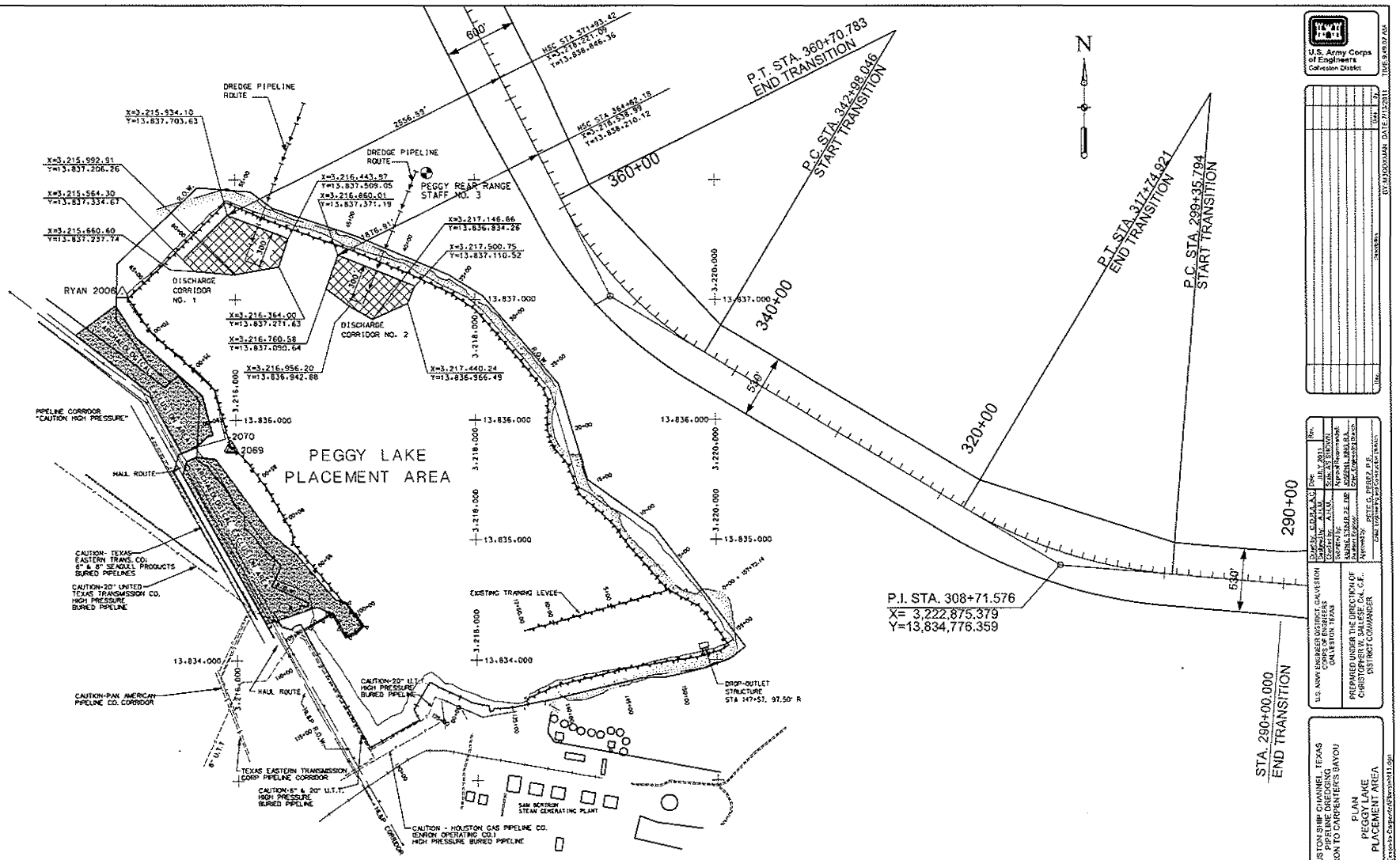
HOUSTON SHIP CHANNEL, TEXAS
PIPELINE DREDGING
EXXON TO CARPENTER'S BAYOU

GENERAL NOTES AND LEGEND

Drawing No.:
C-02
Sheet 2 of 11
File No. HSC 401-529

DATE: 7/13/2011 TIME: 9:49:50 AM


PLAN
SCALE IN FEET
1:500
NOTE:
1. FOR ALL GENERAL NOTES, LEGENDS, ALIGNMENT DATA, AND HORIZONTAL CONTROL SEE SHEET C-02.
PEGGY LAKE PLACEMENT AREA
EXISTING CHANNEL LEVEE
P.I. STA. 352+08.884
X= 3,219,130.000
Y=13,837,027.317
P.I. STA. 308+71.576
X= 3,222,676.379
Y=13,834,716.369
SECTION NO. 3
SCHEDULE NO. 1
SECTION NO. 2
SCHEDULE NO. 1
SECTION NO. 1
SCHEDULE NO. 1
NAVIGATION LINE
STA 390+00.000
END TRANSITION
STA. 370+00.000
BEGIN TRANSITION
STA. 360+70.783
P.T. STA. 360+70.783
END TRANSITION
P.C. STA. 342+98.046
START TRANSITION
P.T. STA. 317+74.921
END TRANSITION
P.C. STA. 299+35.794
START TRANSITION
DOWNSTREAM LIMIT
OF DREDGING
STA. 295+00
STA. 290+00.000
END TRANSITION
STA. 280+00.000
BEGIN TRANSITION
C.S. 400+00
C.S. 390+00
C.S. 380+00
C.S. 370+00
C.S. 360+00
C.S. 350+00
C.S. 342+98.046
340+00
C.S. 330+00
320+00
C.S. 317+74.921
C.S. 310+00
C.S. 299+35.794
C.S. 295+00
290+00
280+00
600'
500'
N
SOLICITATION NO.
W912HY-11-B-0015
C-04
Drawing No.:
HOUSTON SHIP CHANNEL, TEXAS
PIPELINE DREDGING
EXXON TO CARPENTER'S BAYOU
PLAN
STA. 295+00 TO STA. 390+00
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS
PREPARED UNDER THE DIRECTION OF
CHRISTOPHER W. SALLESE, Col., C.E.,
DISTRICT COMMANDER
Drawn by: C.D./R.S./A.C.
Designed by: A.H.M.
Checked by: A.H.M.
Submitted by:
RALPH E. STONER, P.E., PMP
Resident Engineer
Approved by:
PETE G. PEREZ, P.E.
Chief, Engineering and Construction Division
Date: JULY 2011
Scale: AS SHOWN
Approved/Recommended:
JOSEPH L. KING, P.E.
Chief, Engineering Branch
Rev.
No.
Description
By
Date
U.S. Army Corps of Engineers
Galveston District
File: W:\Cadd\Projects\hsc\401-529_Exxon-to-Carpenter\Plans\sht04.dgn
BY: ahmoorman DATE: 7/13/2011
TIME: 8:49:57 AM



NOTES:

1. FOR ALL GENERAL NOTES, LEGENDS, ALIGNMENT DATA, AND HORIZONTAL CONTROL SEE SHEET C-02.
2. AT EACH DISCHARGE CORRIDOR, END OF PIPE TO BE PLACED A MINIMUM OF 300' FROM EDGE OF INTERIOR BERM (LOST LAKE AND PEGGY LAKE).

U.S. Army Corps of Engineers
Galveston District

HOUSTON SHIP CHANNEL, TEXAS
CHANNEL IMPROVEMENT
EXXON TO CARPENTER'S BAYOU

PLAN
PEGGY LAKE
PLACEMENT AREA

U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
CHRISTOPHER L. SALLESE, P.E.
DISTRICT COMMANDER

Drawing No.:
C-11
Sheet 11 of 11

SOLICITATION NO.
W912HY-11-B-0015

File No. HSC 401-529

DRAFT SAMPLING AND ANALYSIS PLAN

SAMPLING, AND CHEMICAL ANALYSIS
HSC – EXXON TO CARPENTER BAYOU

Objectives

Water and sediment samples shall be collected from the Federally-maintained navigation channel, for the purpose of conducting testing to characterize the shoal material that will be excavated during routine maintenance dredging. The material shall be evaluated to determine whether unacceptable adverse impacts would result from dredging and dredged material placement operations. The evaluation will comprise chemical analyses of sediment water and elutriate samples, and grain-size analyses.

All sample collections and chemical analyses are to be conducted according to appropriate existing Standard Operating Procedures (SOP). Prior to sample collection, all containers and sampling equipment shall be cleaned according to protocols described in Plumb (1981), or other appropriate guidance manuals. Care must be taken to avoid contamination to sampling devices from the boat deck, or other surfaces. Powderless latex gloves shall be worn during sample collection and sample handling.

Sediment Samples

Sediment samples shall be collected with a stainless steel Ekman, Ponar, Peterson or similar dredge. Prior to collection at each sample site, the dredge shall be rinsed with deionized water, then ambient water. The sample shall then be collected and deposited into a clean stainless steel pan. The sediment sample should be characterized as non-cohesive. If consolidated clay is collected, the sample is to be discarded, since it would not be representative of the shoal material in the channel bottom.

Using a clean stainless steel or teflon spoon, the sample that is to undergo chemical analyses is to be mixed thoroughly, then placed into a pre-cleaned glass jar. The jar is to be completely filled so as to avoid head space. The lid shall then be tightly secured, and the sample jar is to be placed into an ice chest, containing sufficient cushioning material to prevent breakage.

The water depths at the channel sample sites should be approximately 44 to 48 feet below Mean Low Tide. Depths more shallow are probably not within the channel template and deeper depths will be beyond the dredging depth.

Water Samples

A suitable non-contaminating pump, such as a metal-free bilge pump shall be used to collect water samples. Food-grade hoses shall also be used. The depth of the water sample shall be between mid-depth to 1/3 of the way to the bottom. Under no circumstances should the water intake hose end be any closer than 1.0 meter from the sediment surface. The initial pumped water equaling at least five times the hose volume shall be discarded. The water sample shall

then be collected into suitable pre-cleaned bottles. Polyethylene or glass bottles with appropriate acid preservatives shall be used for metals analyses. Also, water samples to be analyzed for metals, other than mercury and selenium, are to be filtered through a clean 0.45μm filter prior to dispensing into containers with acid preservatives. Water samples to be analyzed for mercury and selenium shall not be filtered prior to dispensing into containers with acid preservatives. Pre-cleaned brown glass bottles shall be used for organics analyses. Bottles are to be filled completely, avoiding the presence of any air bubbles in the sample bottle.

Sample Preservation and Storage

A suitable method for preservation and shipment of water and sediment samples must be used. The samples must be stored at 2°C to 4°C, never frozen, immediately after collection. Analyses are to be performed within the recommended holding times, as described in the referenced guidance documents.

Sample Sites

The following table describes the sample designation and location for each sample to be collected. The locations are also depicted on the enclosed plan sheets. Each sediment sample shall represent a composite of separate samples of equal volume collected from the locations described in the following table. If the depths at these positions are not within the range specified above, the position shall be adjusted the least amount possible to meet all requirements.

Sample Number	Location (State Plane NAD 27)	Sample Matrix	Analyses*
Houston Ship Channel			
H-MC-11-07	Station 300+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-07A	3,255,315 Easting; 711,013 Northing	Sediment	Component of **H-MC-11-07**
H-MC-11-07B	3,255,358 Easting; 711,512 Northing	Sediment, Water	Component of **H-MC-11-07**
H-MC-11-08	Station 350+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-08A	3,250,774 Easting; 713,365 Northing	Sediment	Component of **H-MC-11-08**
H-MC-11-08B	3,251,155 Easting; 713,761 Northing	Sediment, Water	Component of **H-MC-11-08**

Sample Number	Location (State Plane NAD 27)	Sample Matrix	Analyses*
H-MC-11-09	Station 400+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-09A	3,248,336 Easting; 717,806 Northing	Sediment	Component of **H-MC-11-09**
H-MC-11-09B	3,248,784 Easting; 718,029 Northing	Sediment, Water	Component of **H-MC-11-09**
H-MC-11-10	Station 450+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-10A	3,245,312 Easting; 721,431 Northing	Sediment	Component of **H-MC-11-10**
H-MC-11-10B	3,245,576 Easting; 721,857 Northing	Sediment, Water	Component of **H-MC-11-10**
H-MC-11-470	Station 470+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-470A	3,243,595 Easting; 722,256 Northing	Sediment	Component of **H-MC-11-470**
H-MC-11-470B	3,243,712 Easting; 722,742 Northing	Sediment, Water	Component of **H-MC-11-470**
H-MC-11-11	Station 500+00	Composited Sediment Sample	W, S, E, GS
H-MC-11-11A	3,241,008 Easting; 721,736 Northing	Sediment	Component of **H-MC-11-11**
H-MC-11-11B	3,240,669 Easting; 722,104 Northing	Sediment, Water	Component of **H-MC-11-11**

* W = Analysis of a water sample
S = Analysis of a sediment sample
E = Analysis of an elutriate sample
GS = Grain-size analysis

Chain of Custody

Appropriate Chain of Custody protocols shall be followed. Guidance can be found in U.S. EPA (1986), U.S. EPA and USACE (1995), U.S. EPA and USACE (1998), and Plumb (1981).

Chemical Analyses

Each of the composite samples shall undergo the analyses shown in the Table above. These samples shall entail bulk sediment, water, elutriates and grain-size. All analyses shall be performed by a laboratory accredited by an accrediting authority recognized by the National

Environmental Laboratory Accreditation Program (NELAP) for the analytes/analyte groups and matrices to be analyzed. All analyses shall be performed within the holding period described in the referenced guidance documents. Parameters to be analyzed are listed in the following table, along with required detection limits. Sediment sample data shall be reported as dry weight.

Analyses for Dioxins and Furans

All sediment, water, and elutriate samples shall be analyzed for the dioxins and furans listed in the table below. Laboratory results shall be reported as TEQ and TCDD organic carbon normalized, or TCDD non-organic carbon normalized. The laboratory shall use WHO 2005 TEF to calculate TEQ.

Target Detection Levels[a] (TDLs)
for Analysis of Sediment, Water, and Elutriate

Chemical	Sediment	Water/Elutriate
Metals[e]		
	mg/kg	**µg/l**
Antimony	2.5	3 (0.02)[c]
Arsenic	0.3[b]	1 (0.005)[c]
Beryllium	1[b]	0.2
Cadmium	0.1	1 (0.01)[c]
Chromium (total)	1[b]	1
Chromium (3+)	1	1
Chromium (6+)	1	1
Copper	1[b]	1 (0.1)[c]
Lead	0.3[b]	1 (0.02)[c]
Mercury	0.2	0.2 (0.0002)[c]
Nickel	0.5[b]	1 (0.1)[c]
Selenium	0.5[b]	2
Silver	0.2	1 (0.1)[c]
Thallium	0.2	1 (0.02)[c]
Zinc	2[b]	1 (0.5)[c]
Conventional/Ancillary Parameters		
	mg/kg	**mg/l**
Ammonia	0.1	0.07
Cyanides	2	0.1[d]
Total Organic Carbon	0.1%	0.1%
Total Petroleum Hydrocarbons	5	0.1
Grain Size	1%	-
Total Solids/Dry Weight	0.1%	-

Chemical	Sediment	Water/Elutriate
LPAH Compounds		
	µg/kg	**µg/l**
Naphthalene	20	0.8[b]
Acenaphthylene	20	1.0[b]
Acenaphthene	20	0.75[b]
Fluorene	20	0.6[b]
Phenanthrene	20	0.5[b]
Anthracene	20	0.6[b]
HPAH Compounds		
	µg/kg	**µg/l**
Fluoranthene	20	0.9[b]
Pyrene	20	1.5[b]
Benzo(a)anthracene	20	0.4[b]
Chrysene	20	0.3[b]
Benzo(b&k)fluoranthene	20	0.6[b]
Benzo(a)pyrene	20	0.3[b]
Indeno[1,2,3-c,d]pyrene	20	1.2[b]
Dibenzo[a,h]anthracene	20	1.3[b]
Benzo[g,h,i]perylene	20	1.2[b]
Organonitrogen Compounds		
	µg/kg	**µg/l**
Benzidine	5	1
3,3-Dichlorobenzidine	300[b]	3[b]
2,4-Dinitrotoluene	200[b]	2[b]
2,6-Dinitrotoluene	200[b]	2[b]
1,2-Diphenylhydrazine	10	1
Nitrobenzene	160[b]	0.9[b]
N-Nitrosodimethylamine	-	3.1[b]
N-Nitrosodi-n-propylamine	150[b]	0.9[b]
N-Nitrosodiphenylamine	20	2.1[b]
Phthalate Esters		
	µg/kg	**µg/l**
Dimethyl Phthalate	50	1[b]
Diethyl Phthalate	50	1[b]
Di-n-butyl Phthalate	50	1[b]
Butyl Benzyl Phthalate	50	4[b]
Bis[2-ethylhexyl] Phthalate	50	2[b]

Chemical	Sediment	Water/Elutriate
Di-n-octyl Phthalate	50	3[b]
Phenols/Substituted Phenols		
	µg/kg	**µg/l**
Phenol	100	10
2,4-Dimethylphenol	20	10
Pentachlorophenol	100	50
2,4,6-Trichlorophenol	140[b]	0.9[b]
4-Chloro-3-methylphenol	140[b]	0.7[b]
2-Nitrophenol	200[b]	2[b]
4-Nitrophenol	500[b]	5[b]
2,4-Dinitrophenol	500[b]	5[b]
2-Chlorophenol	110[b]	0.9[b]
2,4-Dichlorophenol	120[b]	0.8[b]
4,6-Dinitro-o-cresol	600	10
Polychlorinated Biphenyls		
	µg/kg	**µg/l**
Total PCB	1	0.01
Pesticides		
	µg/kg	**µg/l**
Aldrin	3[b]	0.07[b]
Chlordane and Derivatives	3[b]	0.07[b]
Dieldrin	5[b]	0.02
4,4'-DDD	5[b]	0.1
4,4'-DDE	5[b]	0.1
4,4'-DDT	5[b]	0.1
Endosulfan and Derivatives	5[b]	0.1
Endrin and Derivatives	5[b]	0.1
Heptachlor and Derivatives	3[b]	0.1
Alpha-BHC	3[b]	0.07
Beta-BHC	3[b]	0.07
Delta-BHC	3[b]	0.07
Gamma-BHC (Lindane)	3[b]	0.1
Toxaphene	50	0.5
Chlorinated Hydrocarbons		
	µg/kg	**µg/l**
1,3-Dichlorobenzene	20	0.9[b]
1,4-Dichlorobenzene	20	1[b]

Chemical	Sediment	Water/Elutriate
1,2-Dichlorobenzene	20	0.8[b]
1,2,4-Trichlorobenzene	10	0.9[b]
Hexachlorobenzene	10	0.4[b]
2-Chloronapthalene	160[b]	0.8[b]
Hexachlorocyclopentadiene	300[b]	3.0[b]
Hexachloroethane	100	0.9[b]
Hexachlorobutadiene	20	0.9[b]
Halogenated Ethers		
	µg/kg	**µg/l**
Bis(2-chloroethyl)ether	130[b]	0.9[b]
4-Chlorophenyl phenyl ether	170[b]	0.6[b]
4-Bromophenyl phenyl ether	160[b]	0.4[b]
Bis(2-chloroisopropyl)ether	140[b]	0.7[b]
Bis(2-hloroethoxy)methane	130[b]	1[b]
Miscellaneous		
	µg/kg	**µg/l**
Isophorone	10	1
Polychlorinated Dibenzo-p-dioxins		
2,3,7,8-TCDD	EPA Method 1613, 8280b, or 8290a	
Pentachlorinated Dioxins	EPA Method 1613, 8280b, or 8290a	
Hexachlorinated Dioxins	EPA Method 1613, 8280b, or 8290a	
Heptachlorinated Dioxins	EPA Method 1613, 8280b, or 8290a	
Octachlorinated Dioxins	EPA Method 1613, 8280b, or 8290a	
Polychlorinated Dibenzofurans		
Tetrachlorinated Furans	EPA Method 1613, 8280b, or 8290a	
Pentachlorinated Furans	EPA Method 1613, 8280b, or 8290a	
Hexachlorinated Furans	EPA Method 1613, 8280b, or 8290a	
Hepatachlorinated Furans	EPA Method 1613, 8280b, or 8290a	
Octachlorinated Furans	EPA Method 1613, 8280b, or 8290a	
Dibenzo Furan	EPA Method 1613, 8280b, or 8290a	

[a]The primary source of these TDLs was EPA 823-B-95-001, *QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations.*

[b]These values are based on recommendations from the EPA Region 6 Laboratory in Houston; these values were based on data or other technical basis.

[c]The values in parentheses are based on EPA "clean techniques", (EPA 1600 series methods) which are applicable in instances where other TDLs are inadequate to assess EPA water quality criteria.

[d]This value recommended by Houston Lab using colorimetric method.

[e]Metals shall be expressed as Dissolved values in water samples, except for mercury and selenium, which shall be reported as Total Recoverable Concentrations.

Laboratory Quality Control

The Laboratory Quality Control program must include, but not be limited to:

a) The laboratory shall have current accreditation status, consistent with standards adopted by the National Environmental Laboratory Accreditation Conference (NELAC).

b) Method Blanks - Shall be performed at a frequency of one per batch of samples, per matrix type, per sample extraction or preparation method.

c) Laboratory Control Samples – Shall be analyzed at a minimum of 1 per batch of 20 or less samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions are not available.

d) Matrix Spikes – Shall be performed at a frequency of 1 in 20 samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions are not available. The spike concentration shall be no greater than 25% to 50% of the maximum concentration along the linear segment of the instrument calibration curve for any analyte.

e) Matrix Spike Duplicates – Shall be analyzed at a minimum of 1 in 20 samples per matrix type, per sample extraction or preparation method.

f) Surrogates – Surrogate compounds must be added to all samples, standards, and blanks for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available.

g) Field Equipment Blanks – Analysis shall be performed at a frequency of one per batch of samples collected.

h) Calibration of instrumentation and performance of periodic instrument checks according to manufacturer and EPA recommendations, and appropriate SOPs.

i) Participation in performance evaluation and method studies available from EPA, American Society for Testing and Materials (ASTM), or other agency. Performance evaluation under such a program is to be conducted, at least, on a semiannual basis.

j) Each new shipment or lot of solvent, reagent or adsorbent will be evaluated for purity in accordance with appropriate SOPs.

k) Standards will be prepared and verified in accordance with appropriate SOPs.

l) Calculation of QC limits and preparation of control charts will be performed in accordance with appropriate SOPs.

m) Out of control events, or outlier data will be noted and corrective action will be taken in accordance with appropriate SOPs.

Documentation of all Quality Control activities performed specifically in conjunction with this project is to be furnished along with sample results. Copies of all raw data, lab notes, chromatograms, standard curves, etc. shall be furnished upon request.

Report

Deliverables shall include a brief letter report describing sampling activities, along with the completed Water Quality Data sheets, chemical data, and Quality Control data requested above. Only one hard copy shall be submitted. In addition to the hard copy, a CD-ROM shall be provided, and shall contain MS Word and/or Excel files used to report the required data.

Schedule and Deliverables

The work described in this Scope of Work shall be completed according to the following schedule:

Field Work (Sample Collection – 2 weeks after NTP – 25% of payment authorized

Laboratory - Chemical Analyses Completed – 6 weeks after NTP – 50% of payment authorized

Submit Data Report – 9 weeks after NTP – 25% of payment authorized

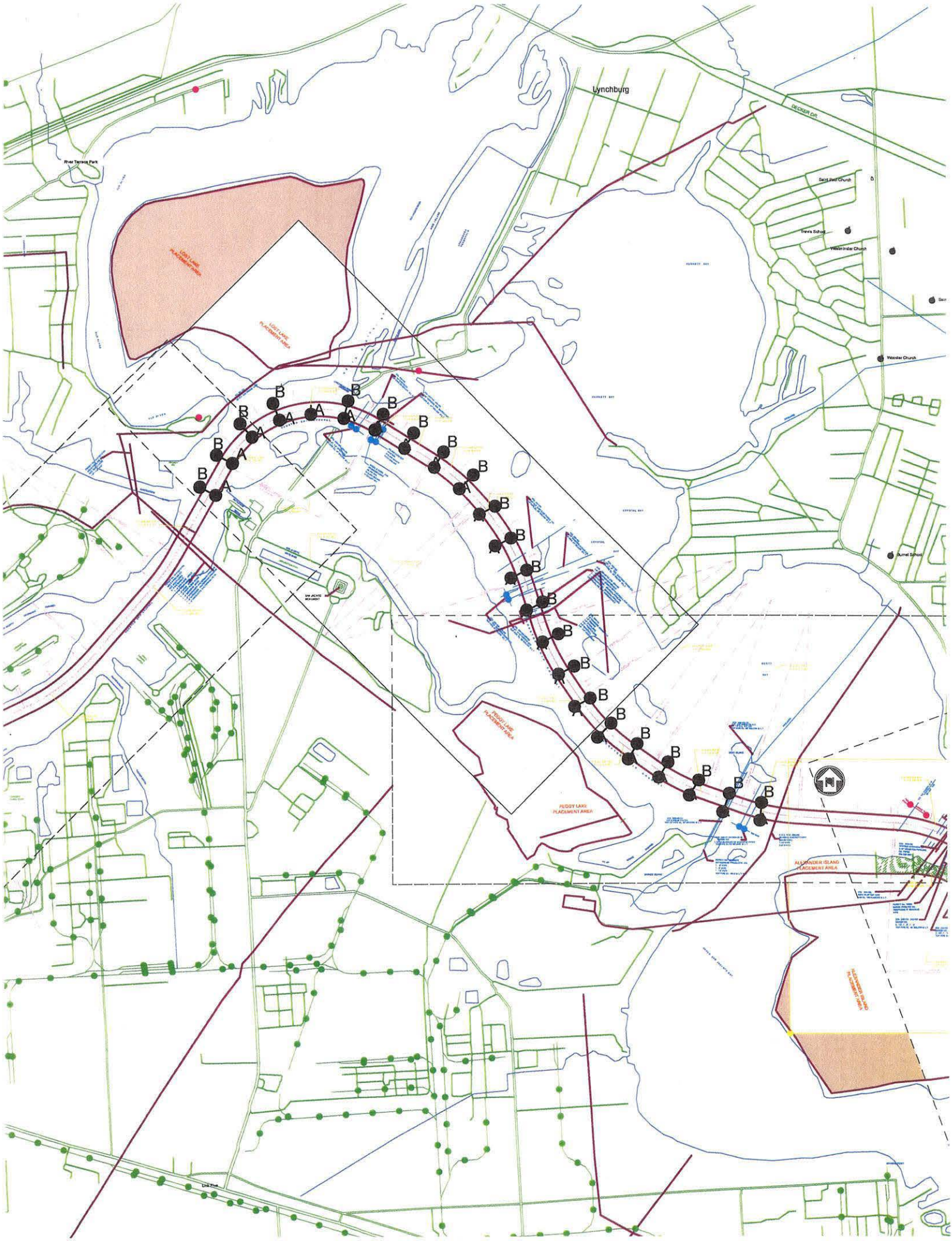
References

Plumb, R.H., Jr. 1981. *Procedure for Handling and Chemical Analysis of Sediment and Water Samples.* EPA/CE-81-1. Prepared by State University College at Buffalo, Great Lakes Laboratory, Buffalo, N.Y. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.

U.S. EPA. 1986. *Test Methods for Evaluating solid Waste (SW846): Physical/chemical Methods.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

U.S. EPA and USACE. 1995. *QA/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations - Chemical Evaluations.* EPA 823-B-95-001. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Washington, D.C.

U.S. EPA and USACE. 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual.* EPA-823-B-98-004. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Washington, D.C.


Lynchburg
DECKER DR.
River Terrace Park
Saint Paul Church
Trevis School
Westminster Church
Wesley Church
Bunnell School
LOST LAKE PLACEMENT AREA
PEGGY LAKE PLACEMENT AREA
ALEXANDER ISLAND PLACEMENT AREA
B
A


B
A